D R A F T

INTERNAL DRAFT ONLY

SECTION 205 DETAILED PROJECT REPORT FOR FLOOD CONTROL
COYOTE CREEK AT ROCK SPRINGS
SAN JOSE, CALIFORNIA

Prepared by the U.S. Army Corps of Engineers
San Francisco District

March 2003

INTERNAL DRAFT ONLY

SECTION 205 DETAILED PROJECT REPORT
FOR FLOOD CONTROL
COYOTE CREEK AT ROCK SPRINGS, SAN JOSE, CALIFORNIA

TABLE OF CONTENTS

Section **Page #**

1.0 **INTRODUCTION**..……………………………………………………….…..5
1.1 Purpose and Scope..………………………………………………….….. 5
1.2 Study Authority……………………………………………………………….5
1.3 Study Area……………………………………………………………….. ….5
1.4 Study Participation and Coordination……………………………………..6
1.5 Prior Studies and Reports…………………………………………………..6

2.0 **NEED FOR AND OBJECTIVES OF ACTION**……………………………6
2.1 National Objectives…..……………………………………………………..6
2.2 Problems and Opportunities………………………………………… …6

3.0 **STUDY AREA DESCRIPTION**…………………………………………….8
3.1 Setting…………………………..…………………………….. …. ..8
3.2 Existing Conditions………………………………………………………8
3.3 Planning Objectives………………………………………………………9
3.4 Planning Constraints………………………………………………………..10

4.0 **PLAN FORMULATION**………………………………………………….10
4.1 Management Measures and Preliminary Plans………………………….11
4.2 Assumptions ………………………………………………………………..12
4.3 Studies and Investigations Completed to Date……………………… …12

5.0 **CONCLUSIONS AND RECOMMENDATIONS**………………………….15
5.1 Conclusions………………………………………………………………… 15
5.2 Recommendations..…………………………………………………………16

FIGURES

Figure 1 – Study Area………………………………………………………...7
Figure 2 – Project Limits………………………………………………………13

APPENDICIES

Appendix A – Public Notice……………………………………………………….A-1
Appendix B – Review of Existing Hydrology………………………………….….B-1
Appendix C – HTRW Report (Phase 1) ……………………………………….....C-1
Appendix D – Cultural Resources Investigation…………………………….…..D-1
Appendix E – Surveying Report for California Red-Legged Frog Habitat…...E-1
Appendix F – Basis of Cost…………………………………………………….….F-1
Appendix G – Preliminary Economic Analysis………………………………….G-1

1.0 **INTRODUCTION**

1.1 **Purpose and Scope**

The purpose of this CAP (Continuing Authorities Program) feasibility study, conducted in accordance with Federal water resources planning principles, guidelines, policies, and legislation, was to identify problems and needs of Coyote Creek at Rock Springs and determine whether there was a Federal interest in participating in a solution to the identified problem(s). The Continuing Authorities Program procedures allow the Corps of Engineers to bring expertise to investigate water resources problems of a more limited scope than those that are pursued under Congressional authorization. This study focused on measures to reduce the flooding problems in the Coyote Creek at Rock Springs area, in San Jose, California.

It was determined that there is no Federal interest in the Section 205 flood control study for the Coyote Creek at Rock Springs study area at this time. The economic evaluation found that the benefits, i.e, the reduction in flood damages, were not significant enough to justify the costs of improvement. This evaluation is discussed in more detail later in this report. Discussed below are the initial steps taken during this feasibility study and the conclusions of the investigations and studies conducted.

1.2 **Study Authority**

This study was conducted under the authority of Section 205 of the Flood Control Act of 1948 (Public Law 80-858), as amended. The study was requested by the Santa Clara Valley Water District.

1.3 **Study Area**

The study area is located just northeast of Senter Road in San Jose. The northern part of the project begins approximately at the east side of the intersection of Senter Road and Phelan Avenue; it then extends east/southeast until it meets Coyote Creek. The project is southerly bounded by the Carrol Ranch property. From that point the project extends southwest back to Senter Road. The project is restricted specifically along the west side of Coyote Creek. The floodplain is small, encompassing several blocks and is in a “bowl” configuration. The general description of flooding is over bank flooding from Coyote Creek with the “bowl” filling with floodwaters, inundating structures, then receding. A map of the study area is shown on Figure 1.

INTERNAL DRAFT ONLY

1.4 Study Participation and Coordination

An initial preliminary analysis, conducted in 1998, resulted in the findings that there was potential Federal interest that warranted continuation of the study into the feasibility phase. The Santa Clara Valley Water District, as the non-Federal sponsor, and the U.S. Army Corps of Engineers (Corps) signed the Feasibility Cost Sharing Agreement (FCSA) in January 2000, and the feasibility phase of the study was initiated in April 2000. The feasibility phase study cost was Federally funded with $100,000, and then cost shared equally between the Corps and the local sponsor. As stated earlier, this report presents the results of the preliminary analysis.

1.5 Prior Studies and Reports

Previous studies by local interests have looked at other options and concluded the levee was the most cost-effective solution to the urban flooding at Coyote Creek. The levee plan is compatible with the Coyote Creek Park Chain and the Creekside Trail Plan.

2.0 NEED FOR AND OBJECTIVES OF ACTION

This chapter presents the results of the specific water and related land resources problems and opportunities in the study area. The chapter concludes with the establishment of planning objectives and planning constraints, which was the basis for the formulation of alternative plans.

2.1 National Objectives

The National or Federal objective of water and related land resources planning is to contribute to the National Economic Development (NED) consistent with protecting the nation’s environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Contributions to National Economic Development are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.

2.2 Problems and Opportunities

The problems and opportunities that have been identified are: (1) The Coyote Creek at Rock Springs study area suffers from problems associated with fluvial flooding due to over bank flooding from Coyote Creek; and (2) There are opportunities to reduce flooding and associated urban property damage within the area.

FIGURE 1 – STUDY AREA

INTERNAL DRAFT ONLY

3.0 **STUDY AREA DESCRIPTION**

3.1 **Setting**

The Coyote Creek at Rock Springs study area is located in San Jose, in west-central California. In 1997, flooding on the Coyote Creek caused significant damage to the Rock Springs neighborhood. During the storm's peak, floodwaters reached as high as five feet in neighborhood homes and businesses.

3.2 **Existing Conditions**

The area subject to flooding is within the jurisdiction of the Santa Clara Valley Water District and is flooded by Coyote Creek. The particular "basin" of interest is bounded by Phelan Avenue to the north, Senter Drive to the west, and Needles Drive to the south. The project site is bordered on the west by a heavily urbanized residential and industrial neighborhood and on the east by a mix of farmland and residences.

The area in the Rock Springs neighborhood was badly damaged during the January 1997 flood on Coyote Creek, approximately a 15-year event. Water in some buildings was 4 to 5 feet deep. Construction of the levee was identified as the most viable option for this area in a 1973 Santa Clara Valley Water District plan. The Water District has indicated that they would prefer a project that meets FEMA criteria.

The project would reduce a flood hazard with structural measures. Non-structural measures were considered but were determined not to be feasible. The City of San Jose is a participant in the National Flood Insurance Program (NFIP) since 1975. The City also has a flood hazard mitigation plan which describes a wide range of strategies, goals and policies that address flood hazards and their mitigation.

3.2.1 **Hydrology**

The Water Resources Section prepared a report entitled *Review of Existing Hydrology* dated 25 January 2001, which presented findings and recommendations following a review of an existing hydrology study for possible use in this Section 205 study for Coyote Creek at Rock Springs Road in San Jose. This June 1977 hydrology study was prepared by the San Francisco District and is entitled *Hydrologic Engineering Office Report for Guadalupe River and Coyote Creek, Santa Clara County, California.*

In reviewing the 1977 hydrology report for adequacy it was determined that several issues required further investigation before results from that study could be used in the Rock Springs Road study. These were:

a. An additional 21 years of streamflow measurements at the USGS stream gaging station *Coyote Creek near Edenvale* are available for analysis;

b. The Anderson Dam spillway was widened in 1990 and could affect downstream peak flows;

c. The operational rule curves for Anderson and Coyote Dams have changed since the 1977 study; and

d. Future hydrology in the 1977 study was developed for the year 2010, whereas the Section 205 study requires future hydrology to be estimated to the year 2050.

3.3 **Planning Objectives**

The planning objective for this study was to reduce flooding in the Rock Springs area of Coyote Creek, consistent with protecting the nation's environment. This was a common objective of both the Corps and the Santa Clara Valley Water District.

3.4 **Planning Constraints**

Unlike planning objectives that represent desired positive changes, planning constraints represent restrictions that should be avoided. The planning constraints identified in this study were: (1) to minimize disturbance to existing structures and utilities; (2) to minimize the height of the floodwalls in residential and commercial areas; and (3) to minimize the impact to wetland habitat.

The Continuing Authorities Program (CAP) provides the Corps authority to plan, design, and construct projects of limited scope and complexity. While there is not a limit on the total cost of an individual project implemented under the CAP, Corps policy discourages implementing projects under the CAP authority when the appropriate Federal/non-Federal cost sharing percentages would result in a Federal share that exceeds the statutory per project Federal funding limit of $7,000,000 for Section 205 projects. However, such projects may proceed if the non-Federal sponsor is willing to pay all of what would have been Federal costs in excess of the statutory Federal funding limit of $7,000,000 for Section 205 projects.

3.4.1 **Local Constraints**

The following local constraints were identified:

a. Based on comments the Santa Clara Valley Water District's Coyote Creek Watershed Office received from the local community at Rock Springs during a homeowners association meeting, the retention of the children's playground facilities adjacent to Wool Drive should be considered in the development of any flood control protection design.

b. Avoid the demolition of an apartment building located immediately adjacent to Coyote Creek on Wool Drive.

3.4.2 **Environmental Statutes and Applicable Executive Orders**:

a. National Environmental Policy Act of 1969 (NEPA), as amended.
b. Clean Air Act, as amended.
c. Clean Water Act.
d. Archaeological and Historic Preservation Act of 1974 (AHPA).
e. Executive Order 11593, Protection and Enhancement of the Cultural Environment.
f. National Historic Preservation Act of 1966 (NHPA), as amended.
g. Fish and Wildlife Coordination Act.
h. Endangered Species Act of 1973 (ESA), as amended.
i. Executive Order 11990, Protection of Wetlands.
j. Estuary Protection Act.
k. Executive Order 11988, Floodplain Management.
l. Federal Water Project Recreation Act.
m. California Environmental Quality Act (CEQA), non-Federal statute.

4.0 **PLAN FORMULATION**

The plan formulation process began by identifying where flows historically break out of the existing creek for various magnitudes of flood events. Breakout areas are often located in channel reaches where the capacity is lower than that for upstream reaches. Capacity may be restricted by existing channel conformation or by an obstacle such as a bridge or culvert. Once restricted reaches are identified, flood control measures are developed to increase the capacity of each restricted reach. The most effective flood damage reduction measure, which is feasible on an engineering, environmental, and economic basis, is sought for each reach.

A basic strategy used for the plan formulation rationale is to examine the low flow constraint locations, which are locations of diminished capacity. Structural measures are developed to increase the flows at that constraint point, going from the lower channel capacities upward to the higher-level channel capacities.

4.1 **Management Measures and Preliminary Plans**

4.1.1 **No Action (Without-Project Condition)**. The Corps is required to consider the “No Action” as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). With the No Action Plan, which is synonymous with the “Without Project Condition,” it is assumed that no project would be implemented by the Federal Government or by local interests to achieve the planning objectives. The No Action Plan (without-project condition) forms the basis by or against which all other alternative plans are measured.

4.1.2 **Preliminary Flood Protection Measures Considered**. A number of flood reduction measures were considered during the early phase of study of Coyote Creek at Rock Springs. These measures are either non-structural or structural. Structural measures are designed to reduce flooding and associated damages by altering the flow patterns (the water surface profile). Structural measures may include dams, channel modifications, and levees and floodwalls, which increase the capacity of the existing channel in order to contain higher flows within the channel. Non-structural measures are designed to prevent flood damages by modifying the buildings and structures within the floodplain. Non-structural measures may include evacuation, relocation, and may or may not involve modifications to existing structures within the floodplain.

By combining structural and non-structural measures to constitute comprehensive flood reduction, alternative plans were developed.
Non-structural measures considered included the possible relocation of existing structures (e.g., the apartment building immediately adjacent to Coyote Creek); however, it was determined there were more effective structural alternatives, including the placement of a floodwall and setback levee to protect the area from flooding.

Two alternatives were identified to solve the flooding problems in the area of Rock Springs:

a. Alternative 1: This alternative would involve the construction of an embankment levee, with a sheet pile floodwall. This alternative would have a higher construction cost and would likely have higher mitigation costs, but would have lower real estate costs, than the setback levee alternative (described below).

b. Alternative 2: This alternative would involve the construction of a setback levee and floodwall. The setback levee would consist of a levee with a setback from the creek bank and a tieback floodwall at the south end.

INTERNAL DRAFT ONLY

4.2 **Assumptions**

This feasibility study was conducted with the following assumptions:

(1) Significant channelization of Coyote Creek upstream of Rock Springs is not expected to occur over the life of the project.

(2) Increases in peak flow rates resulting from upstream urbanization would be minimal.

(3) Modifications to the spillway and operational criteria for Anderson Dam since the publication of the Corps' 1977 hydrology study would have minimal effect on the peak flow versus frequency curve data developed for that study.

(4) The extension of Wool Creek Drive, through the Carroll property, is not planned during the life of the project. (See Figure 2 – Project Limits)

4.3 **Studies and Investigations Completed to Date**

Preliminary meetings/investigations/studies that were completed are discussed in the following sections.

4.3.1 **Public Workshop/NEPA Scoping Meeting.** A workshop/NEPA scoping meeting was held on 29 June 2000 in San Jose. A public notice announcing the workshop/NEPA scoping meeting was mailed to the public in three languages (English, Spanish, and Vietnamese) to accommodate the diverse community at the Rock Springs area of Coyote Creek (See Appendix A). No major comments were received during the feasibility/EIS scoping meeting held in June 2001.

4.3.2 **Survey Maps.** Survey maps were completed in the fall of 2000 for the project area.

4.3.3 **Geotechnical Investigations.** Geotechnical investigations were completed by URS (contractor) and a report provided to the Corps on 11July 2001. The limited geotechnical sampling indicated approximately 6 feet of filled soil over a thick layer of sand, a situation that can lead to liquification during an earthquake. Earthquake protection has not yet been included in the rough draft estimate design or the preliminary cost estimate that was prepared. Construction estimates are expected to increase as additional details are confirmed, as will derived estimates for design and project administration.

FIGURE 2 – PROJECT LIMITS

INTERNAL DRAFT ONLY

4.3.4 **Floodplain Maps.** “Without project” floodplain maps were completed by the Water Resources Section. A review of existing hydrology was completed on 25 January 2001, which presented findings and recommendations following a review of an existing hydrology study for possible use in the Section 205 flood control study for Coyote Creek (See Appendix B).

4.3.5 **HTRW Investigation.** The Hazardous, Toxic and Radioactive Waste (HTRW) investigation was completed by contract with Innovative Technical Solutions, Inc. (ITSI) and a report provided to the Corps in January 2002. The report did not identify any specific concerns related to hazardous materials that might impact the flood control project; however, this conclusion was considered preliminary until all information was completely reviewed and the regulatory action file review was completed (See Appendix C).

4.3.6 **Cultural Resources Investigation.** Cultural resources investigations were completed by the San Francisco District Archaeologist in 2002. A summary of the investigations concluded that the Areas of Potential Effects (APE) lacks historic properties, and recommended that no further fieldwork be conducted for the current flood control study. Should the project be enlarged, however, additional cultural resources investigations may be necessary.

These findings and conclusions normally would have been provided to the State Historic Preservation Office (SHPO) and the Native American tribe that has oversight for Santa Clara County pursuant to consultation requirements under Section 106 of the National Historic Preservation Act. No consultation was initiated because of the decision to suspend the Section 205 study pending further notice (See Appendix D).

4.3.7 **Survey for Red-legged Frog Habitat.** A survey of the red-legged frog habitat was conducted by biologists from Tetra Tech, Inc., in 2001. The survey concluded that the site is prime habitat for the California red-legged frog; however, based on the two biologists’ investigation of the site, no frogs were actually found. The U.S. Fish and Wildlife Service recommends annual studies through any construction phase to determine the presence of the red-legged frog. Estimated cost for the studies is $30,000 annually. No formal species consultations have been initiated with the U.S. Fish and Wildlife Service to date (See Appendix E).

4.3.8 **Preliminary Civil Design Drawings.** The Civil Design Section prepared preliminary civil design drawings for the two identified alternatives. These designs were used to develop a preliminary cost estimate of the two alternatives.

4.3.9 **Preliminary Cost Estimate.** The Specifications and Cost Engineering Section prepared a preliminary Basis of Cost, based on the preliminary civil design drawings. These estimates included costs to develop Plans and Specifications, mitigation requirements, and possible real estate costs (See Appendix F).

4.3.10 **Preliminary Economic Analysis.** In order to estimate the flood damages and the flood damage reduction benefits, five major factors were determined and defined: (1) the floodplain of interest was delineated; (2) the number of properties in the floodplain was determined; (3) the value of property in the floodplain was estimated; (4) the elevation of the damageable property within the floodplain was estimated; and (5) the depth of flooding was specified.

A Preliminary Economic Analysis was completed in September 2001. Estimated costs for median 1 percent level of protection (100-year) was estimated at $7.4 million; the estimated costs for median 4 percent level of protection (25-year) was estimated at $5.2 million. The estimates included construction, soft construction costs (includes inspectors, contractors, design effort, testing, etc.), mitigation, and real estate (preliminary estimate) costs (See Appendix G).

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on the review of the information gathered to date, it was determined that there is no Federal interest in the subject study at this time. The economic evaluation found that the benefits, i.e., the reduction in flood damages, were not significant enough to justify the costs of improvements. In the fall of 2001, an economic re-evaluation was performed which (1) accounted for additional structures not included in the previous evaluation and (2) raised the cost per square foot to its highest rate allowable. The resulting flood damages, while higher than what was found previously, were still not large enough to offset the costs of any of the project alternatives. Federal participation in flood control requires the demonstration of positive net benefits or a benefit-to-cost ratio of 1.0 or greater. Flood control improvements at Rock Springs would clearly cost more than the expected reduction in flood damages. The benefit-to-cost ratio was calculated at 0.55 to 1, far less than what is required.

INTERNAL DRAFT ONLY

There are other means to accomplish flood protection in the Rock Springs area. A larger flood control project that would be outside the scale and scope of the Section 205 of the CAP, might yield sufficient economic benefits to justify project costs. Such a project would also require eventual Congressional authorization in the Construction General program. Flood control tied to environmental restoration may allow some flexibility in Federal participation. Congress could direct construction of the Rock Springs project even without positive net benefits.

5.2 **Recommendation**

It is recommended that this project be deferred as there is no economic justification to proceed at this time. The local sponsor has requested the study be terminated based on the information obtained and subsequently evaluated.

MICHAEL McCORMICK
LTC, EN
Commanding